

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets

(11)

Publication number:

**0 130 061**

**A1**

(12)

## EUROPEAN PATENT APPLICATION

(71)

Application number: 84304228.4

(51)

Int. Cl.<sup>4</sup>: **A 61 L 15/00**

**A 61 L 15/06, A 61 L 15/01**

**C 09 J 3/00**

(22)

Date of filing: 22.06.84

(30)

Priority: 27.06.83 US 507657  
30.12.83 US 567012

(43)

Date of publication of application:  
02.01.85 Bulletin 85/1

(84)

Designated Contracting States:  
AT BE CH DE FR GB IT LI LU NL SE

(71)

Applicant: E.R. Squibb & Sons, Inc.  
Lawrenceville-Princeton Road  
Princeton, N.J. 08540(US)

(72)

Inventor: Doyle, Arthur  
120 Lionshead Drive West  
Wayne New Jersey(US)

(72)

Inventor: Freeman, Frank M.  
10 Brandon Road  
Lawrenceville New Jersey(US)

(74)

Representative: Thomas, Roger Tamlyn et al,  
D. Young & Co. 10 Staple Inn  
London WC1V 7RD(GB)

(54)

Adhesive composition resistant to biological fluids.

(57)

Medical grade pressure sensitive adhesive compositions comprising a homogeneous mixture of one or more polyisobutylenes or blends of one or more polyisobutylenes and butyl rubber, one or more styrene radial or block type copolymers, mineral oil, one or more water soluble hydrocolloid gums, and a tackifier. One or more water swellable cohesive strengthening agents, an antioxidant, and various other optional ingredients may be included within the adhesive composition.

EP 0 130 061 A1

ADHESIVE COMPOSITION RESISTANT  
TO BIOLOGICAL FLUIDS

5           This invention is directed to pressure sensitive adhesive compositions particularly adapted for use in the fields of incontinence, ostomy care and wound burn dressings.

10           The adhesive compositions are a homogeneous blend of mineral oil, one or more polyisobutylenes or mixtures of one or more polyisobutylenes and an elastomer such as butyl rubber, styrene radial or block type copolymers, water soluble hydro-colloid gums, water swellable cohesive strengthening  
15           agents, tackifiers, and small amounts of various other optional ingredients. By selection of specific ranges of the amounts of the above listed components, adhesive compositions are prepared having resistance to biological fluids  
20           such as urine as well as the properties of improved adhesion to the skin and stretchability.

          Features of the preferred forms of the invention will now be described.

• This invention is directed to pressure sensitive adhesive compositions suitable for various medical applications and, in particular suited for use in the fields of incontinence, 5 wound drainage, wound and burn dressings and ostomy care. The adhesive compositions of this invention are resistant to erosion by moisture and biological fluids such as urine and fluids that are excreted from a stoma and can leak from 10 a collection appliance. Also, the adhesive compositions of this invention are non-irritating to the human skin.

Thus, the pressure sensitive adhesive compositions of this invention can be prepared 15 in the form of adhesive strips to hold an external type male incontinence device in place or to attach a female incontinence or wound drainage device to the body of the user. The adhesive compositions of this invention can also be prepared as a skin 20 barrier or the adhesive faceplate of a drainable ostomy pouch and is particularly suitable for use by those ostomates who have a urinary diversion stoma. The adhesive compositions of this invention can also be employed in multi- 25

30

35

-3-

layered occlusive dressings such as those described by Pawelchak et al. in South African Patent 83/2413. Such dressings are useful in treating skin lesions such as dermal ulcers and pressure sores as well as in burn therapy.

The pressure sensitive adhesive compositions of this invention are a homogeneous blend of mineral oil, one or more polyisobutylenes or mixture of one or more polyisobutylenes and an elastomer such as butyl rubber, styrene radial or block type copolymers, water soluble hydrocolloid gums, water swellable cohesive strengthening agents, and a tackifier. In addition, small amounts of various other optional ingredients can be included. By employing these ingredients in certain specific amounts, compositions are obtained having the desired balance of the properties of adhesion, durability and stretchability.

The polyisobutylene component of the pressure sensitive adhesive composition functions to provide adhesion to dry body surfaces, i.e., dry tack, and holds the entire composition together. Preferably, the polyisobutylenes employed are one or more low molecular weight polyisobutylenes having a viscosity average molecular weight of from about 36,000 to about 58,000 (Florey). Such polyisobutylenes are commercially available under the trademark Vistanex from Exxon as grades LM-MS and LM-MH. Optionally, in order to increase the elasticity, tear resistance, and cohesiveness of the adhesive compositions as indicated by a reduction in the cold flow

of the adhesive composition, an elastomeric polymer such as butyl rubber can be blended with the polyisobutylenes. Butyl rubber is a copolymer of isobutylene with a minor amount of isoprene having a viscosity average molecular weight of from about 350,000 to about 450,000 (Flörey). The polyisobutylenes and butyl rubber can be blended together on a weight basis of from about 4 parts polyisobutylene to about 1 part butyl rubber to about 1 part polyisobutylene to about 4 parts butyl rubber with about 1 part low molecular weight polyisobutylene to about 2 parts butyl rubber being preferred.

The styrene radial or block copolymer component of the pressure sensitive composition functions to provide extensibility and both rapid and complete recovery from modular strains to the composition. Particularly suitable styrene copolymers include styrene-butadiene-styrene (S-B-S) and styrene-isoprene-styrene (S-I-S) block type copolymers both of which are commercially available, for example, from Shell Chemical Co. under the tradename Kraton as Kraton 1100, 1101, 1102, 1107, etc. Preferably, one or more styrene-isoprene-styrene (S-I-S) block type copolymers are employed.

The pressure sensitive adhesive compositions of this invention contain from about 5% to about 30% by weight of polyisobutylenes or blends of polyisobutylenes and an elastomer such as butyl

rubber and from about 3% to about 20% by weight of styrene copolymers.

Mineral oil is included within the pressure sensitive adhesive composition to increase the aggressiveness of the bonding without requiring undue pressure in applying the adhesive composition to the body, i.e., "wet grab". The mineral oil also functions to increase the stretchability of the final composition. The mineral oil is present in the adhesive compositions of this at from about 8% to about 40% by weight of the final composition.

One or more water soluble hydrocolloid gums are also included within the pressure sensitive compositions. The water soluble hydrocolloids enable the adhesive compositions to adhere to moist body surfaces, i.e., wet tack. Optionally, one or more water swellable cohesive strengthening agents may also be included within the pressure sensitive adhesive compositions. The cohesive strengthening agents along with the water soluble hydrocolloid gums function to control the rate of hydration of the adhesive compositions and enable them to resist erosion by biological fluids such as urine. Suitable water soluble hydrocolloid gums include sodium carboxymethylcellulose, which is preferred, pectin, gelatin, guar gum, locust bean gum, gum karaya, and mixtures thereof. Suitable water swellable cohesive strengthening agents

include finely divided substantially water insoluble cross-linked sodium carboxymethylcellulose such as that commercially available under the trademark AcDiSol or Aqualon and available commercially from Hercules Corp. or FMC or that described in U.S. Patent 3,589,364, finely divided substantially water insoluble starch-acrylonitrile graft copolymer such as that described in U.S. Patent 3,661,815 and commercially available from the Grain Processing Corp., and finely divided substantially water insoluble cross-linked dextran such as that commercially available under the trademark Sephadex. The preferred water swellable cohesive strengthening agent is cross-linked sodium carboxymethylcellulose.

The water soluble hydrocolloid gums are present at from about 15% to about 65% by weight of the adhesive compositions and the water swellable cohesive strengthening agents are present at up to about 15% by weight of the adhesive compositions provided that the water soluble hydrocolloid gums and cohesive strengthening agents together are present at from about 15% to about 65% by weight of the adhesive compositions.

The pressure sensitive adhesive compositions of this invention also include from about 7.5% to about 15% by weight of a tackifier. Suitable tackifiers include the pentaerythritol esters of rosin commercially available from Hercules under the trademark Pentalyn H, trimethylol propane ester of rosin commercially available from Hercules under

the tradename Staybelite Ester 10, and the beta  
pinine resins such as Piccolyte S115 or the  
cyclopentadiene resins commercially available  
from Exxon such as Escorez 5300 or the Arakawa cyclic  
5 tackifiers namely the Arkon products.

Small amounts, i.e., less than about  
5% by weight of the adhesive composition,  
of other optional ingredients may be included  
in the adhesive composition. For example,  
10 up to about 0.5% by weight of an antioxidant  
such as zinc dibutyldithiocarbamate (commercially  
available from R. T. Vanderbilt Co. under  
the tradename Butyl Zimate) or those available  
from Ciba Geigy such as Irganox 1010, tetrakis  
15 [methylene(3,5-ditert-butyl-4-hydroxyhydro-  
cinnamate)methane], or Irganox 1076,  
octadecyl 3-[3,5-ditert-butyl-4'-hydroxy-  
phenyl]propionate, a deodorant such as  
chlorophyllins, or a perfume agent may be  
20 included. In addition, small amounts of a

25

30

35



pharmacologically active ingredient can be included in the adhesive composition. For example, an antibiotic or antimicrobial agent such as neomycin, an antiseptic agent such as povidone iodine, an antiinflammatory agent such as hydrocortisone or triamcinolone acetonide, or a skin protective agent such as zinc oxide. When the bandage is used as a burn dressing, small amounts of active ingredients such as silver sulfadiazine, sulfadiazine, and other silver compounds can be included in the composition. Also, small amounts, i.e., less than 1% by weight of the adhesive composition, of physical reinforcing agents that form Van der Waals bonds with the polymeric substituents can be included such as carbon black, polyaramids (commercially available under the tradename Kevlar), hydrated silicas, etc.

The adhesive compositions of this invention may be prepared as follows. The polyisobutylenes, optional butyl rubber, styrene copolymers, mineral oil, and antioxidant are combined with heating and agitation in a heavy duty high shear sigma blade or equivalent

type mixer. The mixture is heated from about 120° to about 150°C with temperatures of 135°C required when butyl rubber is present in the composition and mixing is continued until the mass is homogeneous. The mixture is then cooled and the tackifier is added with mixing at about 100°C. The water soluble gums, water swellable cohesive strengthening agents, mineral oil, and the other optional ingredients are added with continued heating and mixing at about 80° to 90°. The resultant homogeneous mass is then extruded and rolled or pressed to desired thickness.

By further adjusting the percentage of the components of the adhesive compositions of this invention, properties such as duration of adhesion, resistance to erosion, stretchability, and removal without skin stripping can be varied according to the particular use. Thus, if the adhesive composition is to be used as an ostomy skin barrier, the properties of duration of adhesive and resistance to erosion are most important. If the adhesive composition is to be used with a male incontinence device, stretchability and resistance to erosion are most important whereas avoiding stripping of the skin becomes important for wound and burn dressings.

Adhesive compositions of the present invention preferred for use as ostomy adhesives include from about 20% to about 30% by weight one or more low molecular weight polyisobutylenes or a blend of one or more low molecular weight polyisobutylenes

and butyl rubber, from about 3% to about 10% by weight of one or more styrene-isoprene-styrene block type copolymers, from about 9% to about 25% by weight of mineral oil, from about 30% to about 65% by weight of one or more water soluble hydrocolloid gums, up to about 15% by weight of one or more water swellable cohesive strengthening agents provided that the water soluble hydrocolloid gums and cohesive strengthening agents together are present at from about 30% to about 65% by weight of said composition, preferably from about 35% to about 55% by weight of said composition, and from about 7.5% to about 15% by weight of a tackifier.

Adhesive compositions of the present invention preferred for use in affixing a male incontinence device include from about 5% to about 15% by weight of one or more low molecular weight polyisobutylenes or a blend of one or more low molecular weight polyisobutylenes and butyl rubber, from about 10% to about 20% by weight of one or more styrene-isoprene-styrene block type copolymers, from about 20% to about 40% by weight of mineral oil, from about 25% to about 65% by weight of one or more water soluble hydrocolloid gums, up to about 15% by weight of one or more water swellable cohesive strengthening agents provided that the water soluble hydrocolloid gums and cohesive strengthening agents together are present at from about 25% to about 65% by weight of said

composition, most preferably from about 25% to 50% by weight of said composition, and from about 7.5% to about 15% by weight of a tackifier.

Adhesive compositions of the present invention preferred for use in a wound or burn dressing include from about 5% to about 15% by weight of one or more low molecular weight polyisobutylenes or a blend of one or more low molecular weight polyisobutylenes and butyl rubber, from about 10% to about 20% by weight of one or more styrene-isoprene-styrene block type copolymers, from about 20% to about 40% by weight of mineral oil, from about 30% to about 60% by weight of one or more water soluble hydrocolloid gums, up to about 15% by weight of one or more water swellable cohesive strengthening agents provided that the water soluble hydrocolloid gums and cohesive strengthening agents together are present at from about 30% to about 65% by weight of said composition, and from about 7.5% to about 10% by weight of a tackifier.

The adhesive compositions of this invention may be packaged in strip form and employed to hold a male incontinence device in place as described by Rodgers et al. in U.S. Patents 3,835,857 and 3,863,638. The adhesive compositions may also be employed to affix various medical

-12-

devices to the body such as a female incontinence device as described by Cooney et al. in U.S. Patent 4,198,979, a wound drainage system as described by Harvey in U.S. Patent 3,568,675 and  
5 by Nordby in U.S. Patent 3,954,105, a catheter, or an electronic probe.

If desired, the adhesive compositions may be in a wafer shape with a thin film of polymeric material laminated to one side so that they can  
10 be employed as skin barriers by ostomates. In addition, a coupling element could be attached to the polymeric surface of the skin barrier as taught by Steer et al. in British Patent 1,571,657.

15 The adhesive compositions may be employed as the mounting faceplate of a conventional ostomy pouch and, in particular, a drainable type pouch intended to remain on the body for several days.

20 The adhesive compositions of this invention may be sterilized by means of gamma radiation.

The following examples are illustrative of the invention. Other suitable adhesive  
25 compositions can be obtained by minor variations in the amounts of ingredients employed.

30

35

-13-

Example 1

This example is directed to preparing an adhesive mass having the following composition:

		<u>Percent by weight</u>
5	Polyisobutylene (Vistanex LM-MH)	10.2
	Styrene-isoprene-styrene copolymer (Kraton 1107)	12.6
	Mineral oil	25.1
10	Zinc dibutyldithiocarbamate (Butyl Zimate)	0.06
	Tackifier (Pentalyn H)	8.94
	Sodium carboxymethylcellulose	31.0
15	Cross-linked sodium carboxy- methylcellulose (Ac-Di-Sol)	12.1

The mineral oil (185.7 g.), polyisobutylene (75.8 g.), Kraton 1107 (92.8 g.), and Butyl Zimate (0.4 g.) are combined in a sigma blade mixer with heating (about 115°C) and agitating for approximately 1.0 to 2.5 hours. The mixture is cooled to about 100°C and after another 30 minutes of blending, the sodium carboxymethylcellulose (229.2 g.), cross-linked sodium carboxymethylcellulose (89.1 g.) and Pentalyn H (66.1 g.) are added. Mixing is continued at about 100°C for 30 minutes until a homogeneous mass is obtained.

This mass is allowed to cool and it is flattened to the desired thickness. Silicone coated release paper is applied to both sides

-14-

and it is cut into strips for use with an  
external catheter male incontinence device.

Examples 2 - 25

Following the procedure of Example 1 but  
employing the following ingredients on a weight  
percent basis other adhesive compositions within  
the scope of the invention are prepared.

10

15

20

25

30

35

	<u>Ingredient</u>	<u>2</u>	<u>3</u>	<u>4</u>
	Polyisobutylene (Vistanex LM-MH)	11.68	11.68	7.75
5	Polyisobutylene (Vistanex LM-MS)	-	-	-
	Guar Gum	-	-	-
	Locust Bean Gum	-	-	-
	Pectin	-	-	-
	Karaya	-	-	-
	Gelatin	-	-	-
10	Sodium carboxy- methylcellulose	31.74	28.24	25.1
	Cross-linked sodium Carboxymethylcellulose	12.34	12.34	9.1
15	Starch-acrylonitrile graft copolymer (Grain Processing Corp. Polymer 35-A-100)	-	-	-
	Cross-linked dextran (Sephadex CM-C50)	-	-	-
	Mineral Oil	23.4	26.86	30.4
20	S-I-S copolymer (Kraton 1107)	11.68	11.68	19.2
	S-B-S copolymer (Kraton 1102)	-	-	-
	Tackifier (Pentalyn H)	9.10	9.14	12.3
	Antioxidant	0.06	0.06	0.15
25	Butyl rubber (Grade 065)	-	-	-

30

35



-16-

	<u>Ingredient</u>	<u>5</u>	<u>6</u>	<u>7</u>
	Polyisobutylene (Vistanex LM-MH)	5.9	6.7	-
5	Polyisobutylene (Vistanex LM-MS)	-	-	10.8
	Guar Gum	-	-	26.0
	Locust Bean Gum	-	-	-
	Pectin	-	-	-
	Karaya	-	-	-
	Gelatin	-	-	-
10	Sodium carboxy- methylcellulose	26.3	21.9	-
	Cross-linked sodium Carboxymethylcellulose	10.5	8.0	-
15	Starch-acrylonitrile graft copolymer (Grain Processing Corp. Polymer 35-A-100)	-	-	12.0
	Cross-linked dextran (Sephadex CM-C50)	-	-	-
	Mineral Oil	31.5	40.5	28.5
20	S-I-S copolymer (Kraton 1107)	16.7	13.2	15.0
	S-B-S copolymer (Kraton 1102)	-	-	-
	Tackifier (Pentalyn H)	8.9	9.6	7.5
	Antioxidant	0.2	0.1	0.2
25	Butyl rubber (Grade 065)	-	-	-

30

35

-17-

	<u>Ingredient</u>	<u>8</u>	<u>9</u>	<u>10</u>
	Polyisobutylene (Vistanex LM-MH)	10	15	13
	Polyisobutylene (Vistanex LM-MS)	-	-	-
5	Guar Gum	-	-	-
	Locust Bean Gum	-	20	-
	Pectin	10	-	10
	Karaya	-	-	-
	Gelatin	10	-	-
10	Sodium carboxy- methylcellulose	11	-	17
	Cross-linked sodium Carboxymethylcellulose	-	12	12
	Starch-acrylonitrile graft copolymer (Grain Processing Corp. Polymer 35-A-100)	-	-	-
15	Cross-linked dextran (Sephadex CM-C50)	10	-	-
	Mineral Oil	20	30	25
	S-I-S copolymer (Kraton 1107)	20	-	15
20	S-B-S copolymer (Kraton 1102)	-	15	-
	Tackifier (Pentalyn H)	8.99	7.98	7.98
	Antioxidant	0.01	0.02	0.02
25	Butyl rubber (Grade 065)	-	-	-

30

35

-18-

	<u>Ingredient</u>	<u>11</u>	<u>12</u>	<u>13</u>
	Polyisobutylene (Vistanex LM-MH)	-	15	15
5	Polyisobutylene (Vistanex LM-MS)	15	-	-
	Guar Gum	-	-	-
	Locust Bean Gum	-	-	-
	Pectin	-	-	-
	Karaya	15	-	-
10	Gelatin	-	-	-
	Sodium carboxy- methylcellulose	15	20	20
	Cross-linked sodium Carboxymethylcellulose	8	12	-
15	Starch-acrylonitrile graft copolymer (Grain Processing Corp. Polymer 35-A-100)	-	-	10
	Cross-linked dextran (Sephadex CM-C50)	-	-	-
	Mineral Oil	24	27	35
20	S-I-S copolymer (Kraton 1107)	-	18	12
	S-B-S copolymer (Kraton 1102)	13	-	-
	Tackifier (Pentalyn H)	9.99	7.98	7.98
25	Antioxidant	0.01	0.02	0.02
	Butyl rubber (Grade 065)	-	-	-

30

35

	<u>Ingredient</u>	<u>14</u>	<u>15</u>	<u>16</u>
	Polyisobutylene (Vistanex LM-MH)	15	-	7.3
	Polyisobutylene (Vistanex LM-MS)	-	15	7.3
5	Guar Gum	-	10	-
	Locust Bean Gum	-	-	-
	Pectin	10	-	-
	Karaya	-	-	-
	Gelatin	-	-	-
10	Sodium carboxy- methylcellulose	15	30	36
	Cross-linked sodium Carboxymethylcellulose	10	10	12.3
	Starch-acrylonitrile graft copolymer (Grain Processing Corp. Polymer 35-A-100)	-	-	-
	Cross-linked dextran (Sephadex CM-C50)	-	-	-
	Mineral Oil	30	15	17.59
20	S-I-S copolymer (Kraton 1107)	-	12	10.25
	S-B-S copolymer (Kraton 1102)	11	-	-
	Tackifier (Pentalyn H)	8.99	7.99	9.2
	Antioxidant	0.01	0.01	0.06
25	Butyl rubber (Grade 065)	-	-	-

30

35

-20-

	<u>Ingredient</u>	<u>17</u>	<u>18</u>	<u>19</u>
	Polyisobutylene (Vistanex LM-MH)	24.75	8.0	8.0
	Polyisobutylene (Vistanex LM-MS)	-	-	-
5	Guar Gum	-	-	-
	Locust Bean Gum	-	-	-
	Pectin	15.0	15.0	14.33
	Karaya	-	-	-
	Gelatin	15.0	15.0	14.33
10	Sodium carboxy- methylcellulose	15.0	15.0	14.34
	Cross-linked sodium Carboxymethylcellulose	-	-	-
	Starch-acrylonitrile graft copolymer	-	-	-
15	(Grain Processing Corp. Polymer 35-A-100)	-	-	-
	Cross-linked dextran (Sephadex CM-C50)	-	-	-
	Mineral Oil	13.5	13.5	13.5
	S-I-S copolymer (Kraton 1107)	6.75	6.75	6.75
20	S-B-S copolymer (Kraton 1102)	-	-	-
	Tackifier (Pentalyn H)	10.0	10.0	12.0
	Antioxidant	-	0.50	0.50
25	Butyl rubber (Grade 065)	-	16.25	16.25

30

35

-21-

	<u>Ingredient</u>	<u>20</u>	<u>21</u>	<u>22</u>
	Polyisobutylene (Vistanex LM-MH)	-	10.0	20.0
	Polyisobutylene (Vistanex LM-MS)	10.0	-	-
5	Guar Gum	30.0	-	20.0
	Locust Bean Gum	-	-	-
	Pectin	-	-	-
	Karaya	-	-	-
	Gelatin	-	-	-
10	Sodium carboxy- methylcellulose	-	37.5	15.0
	Cross-linked sodium Carboxymethylcellulose	15.0	10.0	-
	Starch-acrylonitrile graft copolymer (Grain Processing Corp. Polymer 35-A-100)	-	-	-
15	Cross-linked dextran (Sephadex CM-C50)	-	-	-
	Mineral Oil	16.0	9.0	20.0
20	S-I-S copolymer (Kraton 1107)	5.0	3.0	10.0
	S-B-S copolymer (Kraton 1102)	-	-	-
	Tackifier (Pentalyn H)	8.0	10.0	15.0
	Antioxidant	0.8	0.5	-
25	Butyl rubber	15.5	20.0	-

30

35

-22-

	<u>Ingredient</u>	<u>23</u>	<u>24</u>	<u>25</u>
	Polyisobutylene (Vistanex LM-MH)	20.5	8.0	8.0
	Polyisobutylene (Vistanex LM-MS)	-	-	-
5	Guar Gum	-	-	-
	Locust Bean Gum	-	-	-
	Pectin	19.66	15.0	16.0
	Karaya	-	-	-
10	Gelatin	19.67	15.0	16.0
	Sodium carboxy- methylcellulose	19.67	15.0	16.0
	Cross-linked sodium Carboxymethylcellulose	-	-	-
	Starch-acrylonitrile graft copolymer (Grain Processing Corp. Polymer 35-A-100)	-	-	-
15	Cross-linked dextran (Sephadex CM-C50)	-	-	-
	Mineral Oil	10.0	13.5	9.75
20	S-I-S copolymer (Kraton 1107)	3.0	-	10.0
	S-B-S copolymer (Kraton 1102)	-	6.75	-
	Tackifier (Pentalyn H)	7.5	10.0	7.5
25	Antioxidant	-	0.50	0.50
	Butyl rubber (Grade 065)	-	16.25	16.25

30

35

## CLAIMS

1. A pressure sensitive adhesive composition suitable for medical purposes comprising a substantially homogeneous mixture on a percent weight basis of from about 5% to about 30% by weight of one or more polyisobutylenes or a blend of one or more polyisobutylenes and butyl rubber, from about 3.0% to about 20% by weight of one or more styrene radial or block type copolymers, from about 8.0% to about 40% by weight of mineral oil, from about 15% to about 65% by weight of one or more water soluble hydrocolloid gums, up to about 15% by weight of one or more water swellable cohesive strengthening agents provided that said water soluble hydrocolloid gums and said water swellable cohesive strengthening agents together are present at from about 15% to about 65% by weight of said composition, and from about 7.5 to about 15% by weight of a tackifier.

2. An adhesive composition of Claim 1 wherein said water soluble hydrocolloid is selected from the group consisting of sodium carboxymethylcellulose, pectin, gelatin, guar gum, locust bean gum, gum karaya, and mixtures thereof and said water swellable cohesive strengthening agent is selected from the group consisting of cross-linked sodium carboxymethylcellulose, starch-acrylonitrile graft copolymers, and cross-linked dextran.



3. An adhesive composition of Claim 2 wherein said styrene copolymer is a styrene-isoprene-styrene or a styrene-butadiene-styrene block polymer.

4. An adhesive composition of Claim 3 wherein said styrene copolymer is a styrene-isoprene-styrene block copolymer.

5. An adhesive composition of Claim 4 wherein said polyisobutylenes are one or more low molecular weight polyisobutylenes.

6. A pressure sensitive adhesive composition particularly suited for use in attaching a male incontinence device to a patient consisting essentially of a substantially homogeneous mixture on a percent weight basis of from about 5% to about 15% by weight of one or more low molecular weight polyisobutylenes or a blend of one or more low molecular weight polyisobutylenes and butyl rubber, from about 10% to about 20% by weight of a styrene block type copolymer selected from the group consisting of styrene-isoprene-styrene and styrene-butadiene-styrene block copolymers, from about 20% to about 40% by weight of mineral oil, from about 25% to about 65% by weight of a water soluble hydrocolloid selected from the group consisting of sodium carboxymethylcellulose, pectin, gelatin, guar gum, locust bean gum, gum karaya, and mixtures thereof, up to about 15% by weight of a water swellable

cohesive strengthening agent selected from the group consisting of cross-linked sodium carboxymethylcellulose, starch-acrylonitrile graft copolymer, and cross-linked dextran provided that said water soluble hydrocolloids and said water swellable cohesive strengthening agents are together present at from about 25% to about 65% by weight of said composition, from about 7.5% to about 15% by weight of a tackifier, and up to about 0.5% by weight of an antioxidant.

7. An adhesive composition of Claim 6 wherein said styrene copolymer is a styrene-isoprene-styrene block copolymer.

8. An adhesive composition of Claim 7 wherein said water soluble hydrocolloid and said water swellable cohesive strengthening agent together are present at from about 25% to about 50% by weight of said adhesive composition.

9. An adhesive composition of Claim 8 wherein said water soluble hydrocolloid is sodium carboxymethylcellulose and said water swellable cohesive strengthening agent is cross-linked sodium carboxymethylcellulose.

10. An adhesive composition of Claim 6 wherein said tackifier is a pentaerythritol ester of rosin.

11. An adhesive composition of Claim 6 wherein said antioxidant is zinc dibutyldithiocarbamate.

12. A pressure sensitive adhesive composition particularly suited for use as an ostomy skin barrier consisting essentially of a substantially homogeneous mixture on a percent weight basis of from about 20% to about 30% by weight of one or more low molecular weight polyisobutylenes or a blend of one or more low molecular weight polyisobutylenes and butyl rubber, from about 3% to about 10% by weight of a styrene block type copolymer selected from the group consisting of styrene-isoprene-styrene and styrene-butadiene-styrene block copolymers, from about 9% to about 25% by weight of mineral oil, from about 30% to about 65% by weight of a water soluble hydrocolloid selected from the group consisting of sodium carboxymethylcellulose, pectin, gelatin, guar gum, locust bean gum, gum karaya, and mixtures thereof, up to about 15% by weight of a water swellable cohesive strengthening agent selected from the group consisting of cross-linked sodium carboxymethylcellulose, starch-acrylonitrile graft copolymer, and cross-linked dextran provided that said water soluble hydrocolloids and said water swellable cohesive strengthening agents are together present at from 30% to about 65% by weight of said composition, from about 7.5% to

about 15% by weight of a tackifier, and up to about 0.5% by weight of an antioxidant.

13. An adhesive composition of Claim 12 wherein said styrene copolymer is a styrene-isoprene-styrene block polymer.

14. An adhesive composition of Claim 13 wherein said water soluble hydrocolloid and said water swellable cohesive strengthening agent together are present at from about 35% to about 55% by weight of said adhesive composition.

15. An adhesive composition of Claim 14 wherein said water soluble hydrocolloid is a mixture of pectin, gelatin, and sodium carboxymethylcellulose.

16. An adhesive composition of Claim 12 wherein said tackifier is a pentaerythritol ester of rosin.

17. An adhesive composition of Claim 12 wherein said antioxidant is zinc dibutyldithiocarbamate.

18. A pressure sensitive adhesive composition particularly suited for use in a wound or burn dressing consisting essentially of a substantially homogeneous mixture on a percent weight basis of from about 5% to about 15% by weight of one or more low molecular weight polyisobutylenes or a blend of one or more low molecular weight polyisobutylenes and butyl rubber, from about 10% to about 20% by weight of a styrene block copolymer selected from

the group consisting of styrene-isoprene-styrene and styrene-butadiene-styrene block copolymers, from about 20% to about 40% by weight of mineral oil, from about 30% to about 60% by weight of a water soluble hydrocolloid selected from the group consisting of sodium carboxymethylcellulose, pectin, gelatin, guar gum, locust bean gum, gum karaya, and mixture thereof, up to about 15% by weight of a water swellable cohesive strengthening agent selected from the group consisting of cross-linked sodium carboxymethylcellulose, starch-acrylonitrile graft copolymer, and cross-linked dextran provided that said water soluble hydrocolloids and said water swellable cohesive strengthening agents are together present at from about 30% to about 65% by weight of said composition, from about 7.5% to about 10% by weight of a tackifier, and up to about 0.5% of an antioxidant.

19. An adhesive composition of Claim 18 wherein said styrene copolymer is a styrene-isoprene-styrene block copolymer.

20. An adhesive composition of Claim 18 wherein said tackifier is a pentaerythritol ester of rosin.

21. An adhesive composition of Claim 18 wherein said antioxidant is zinc dibutyldithiocarbamate.



European Patent  
Office

# EUROPEAN SEARCH REPORT

8501  
0130061

Application number

EP 84 30 4228

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	FR-A-2 392 076 (COLOPLAST) * whole document *	1-17	A 61 L 25/00 A 61 L 15/06 A 61 L 15/01 C 09 J 3/00
X	GB-A-2 089 351 (COLOPLAST) * page 3, lines 30-55; claims 1-13 * -----	18-21	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			A 61 L 25/00 A 61 L 15/06 A 61 L 15/01
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 09-10-1984	Examiner PELTRE CHR.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			